

## Textbook Searches in Barnes & Nobles by Don Holden

I have searched Barnes & Nobles textbooks, with three keyword searches:

- Electronic Circuits
- Mixed Signal Testing
- Biomedical Instrumentation

The results in each category are sorted in terms of "Bestselling" - the Barnes & Nobles Sales Rank is given. The search was subjective - I skipped over books that I thought were too specialized or simply not appropriate for our students. Some books were included just because they caught my interest.

The first search was done with hopes that I may someday be on a committee to replace the current Circuits book by Paynter and Boydell. A return to the book by Floyd would be a great improvement in my opinion, but there are many possibilities. I want to look at *Art of Electronics* by Horowitz and Hill.

The other two searches are for texts for new courses. I have read *Demystifying Mixed Signal Test Methods*, and I have ordered *Mixed-signal and DSP Design Techniques - Analog Devices, Inc.* Both are published by Newnes - both are \$60 paperbacks. I found *Demystifying ..* to be very readable, but maybe not a text. The same may be true for the other book by Analog Devices. The Newnes books may be mostly for reference - a good text needs serious problems at the ends of the chapters with answers at the back of the book, etc. I have not read any of the biomedical electronics books. Since we have been talking about a biomed course, I decided to include a search. **Please note that the search turned up three LabVIEW books and one MEMS book.** Seems like everything is coming together.

## Circuits Textbooks

**HDL Chip Design:** A Practical Guide for Designing, Synthesizing and Simulating ASICs and FPGAs Using VHDL or Verilog

[Douglas J. Smith](#), Foreword by [Alex Zamfirescu](#)

**Barnes & Noble Sales Rank:** 7,505

A reviewer, A reviewer, October 10, 2000, ★★★★★

### Unique Reference

A dual reference book for VHDL and Verilog. For someone skilled in one language it quickly allows you to understand the syntax and capabilities of the other language. Section on VHDL variables versus signals is very good and provides good understanding of the different coding styles.

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### Art of Electronics

[Paul Horowitz](#), [Winfield Hill](#)

**Barnes & Noble Sales Rank:** 15,846

Joshua Rague, an electronics engineering student, September 3, 2003, ★★★★★

### You MUST have it.

I'm an Electronics Engineering Student from IPN, Mexico, and I got used reading this book since my first semester in a casual encounter with the book. There are many things Engineering teachers don't know and this book provided me of that knowledge (In Mexico teachers hate the Ebers Moll Model). This book makes you a thing that other books don't: Intuition. Don't be wasting your time making complex equations, the designing doesn't have to be so hard. This book makes you understand complex things by an easy and funny way.

Mitch (danth@geotec.net), an electrical engineer, August 7, 2001, ★★★★★

**A baby could learn from this**

I have used mine so much that I had to get it rebound. This is an outstanding book that takes you from the basics of electronics to the meat of engineering. The authors have taken a fun, but sometimes difficult topic to learn and made it seem easy. I recommend this book to anyone who is interested in electronics. I also recommend the companion lab book.

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**Electric Circuits**

[James William Nilsson](#), [Susan A. Riedel](#)

**Barnes & Noble Sales Rank:** 28,802

**FEATURES/BENEFITS**

- **PSpice Supplement contains problems to teach how to construct PSpice source files**—PSpice can be used to solve many of the exercises and problems found in the book.

Peter, an electrical engineering student., October 9, 2003, ★★★

**This book is alright, but not the best**

I would recommend this book for graduate students who would like to review their knowledge, but not for students who just starting to learn electrical engineering. The wording in this book is not very clear and difficult to catch on. I do agree with the first commend that there are not enough examples and to short explanations. Also an answer key would be nice as well. If you have the basic knowledge about electrical science, this book is good, but for starters, look for something else. If you get stuck with this book I would recommend the Schaumm's Outline for electric circuits. This will give you some help. This is not only my own opinion, but also the opinion of my teacher and some other electrical engineers who have been teaching at universities around the globe.

A reviewer, A reviewer, April 11, 2003, ★★★★★

**Its not too bad**

I agree that this book does not have many examples as in the other books. That is the major draw back. I would really suggest the author(s) to have more examples. However, the theory part has been laid out very well. It is one of the better books for understanding theory. And it is definately better than the book by Irwin.

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**Introduction to PSpice for Electric Circuits**

[James W. Nilsson](#), [Susan A. Riedel](#)

**Basic Engineering Circuit Analysis**

[J. David Irwin](#), [Chwanhwa Wu](#)

**Barnes & Noble Sales Rank:** 155,150

A reviewer (kneepukdon@aol.com), a current EE student, October 31, 2002, ★★

**Not the greatest.**

This book gives examples which are much easier than the chapter problems. It does not give any answers for any chapter problems. The text refers figures which are almost always on a different page. Many examples have mistakes which makes the user unsure of their work. I consider myself an above average student and I have to obtain help to learn the topics.

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## Microelectronic Circuits

[Adel S. Sedra](#), [Kenneth C. Smith](#)

**Barnes & Noble Sales Rank:** 31,428

A reviewer, located in Tucson, AZ, January 16, 2002, ★★

### Out of Date; Poorly Organized

This book was originally written about 1982 and has evolved by accretion of topics, rather than reappraisal and reorganization. Many problems 'supplement' the text, that is, the text offers no clue on how they are to be solved. These days the free PSpice software allows anyone to set up and simulate any circuit they wish, and experiment with their own designs. This book makes no design use of this free tool, and uses it only to verify that their hand analyses aren't too far off. A very antiquated, slow and uninspiring approach. The availability of PSpice completely changes one's mental approach to circuit design, but no sign of that here. MOSFETs are an afterthought, and there is zero awareness of modern MOSFET models. Bottom line: dump it

A reviewer, A reviewer, January 24, 2001, ★★★★★

### Top Notch

This book is well written and to the point. Im a double major in EE and Comp E at a top Engineering College, but Im no whiz kid. I have used many texts on the subject, this one however supplies the information needed as well as numerous questions (with answers) in various degrees of difficulty. You have to be incompetent to fail a course using this book.

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## Electronic Devices and Circuit Theory

[Robert L. Boylestad](#), [Louis Nashelsky](#)

**Barnes & Noble Sales Rank:** 55,831

**NEW**--computer analysis coverage now includes **PSpice** for the **Windows** environment(in addition to DOS version), permitting students to draw as well as analyze each circuit. This coverage provides sufficient content to allow writing of the input file for most of the networks analyzed in the text. Circuit schematics can then be analyzed with output results similar to DOS PSpice.

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## Introductory Circuit Analysis

[Robert L. Boylestad](#)

**Barnes & Noble Sales Rank:** 68,644

Jahn R. Torres, a mechanical engineer, June 11, 2001, ★★★★★

### This Book is a Must for Circuit Courses

The best book out there for an introduction to ac/dc. I use it in all my circuit classes and electric motors, while the rest of the class used a different text book. Because of this I was always ahead.

**Also recommended:** Payntel's Introduction to Semiconductors

william (dward@infocom.com), an electrical contractor/engineer, November 15, 2000, ★★★★★

### Great Book

One of the most informative books on circuit analysis I have ever seen. This book has been updated with better graphics than previous editions which makes it easier to understand.

**Also recommended:** commercial electric wiring by traister electrical design details by traister commercial electical wiring by mullins

MOC, A 26 YEAR OLD STUDENT, May 8, 2000, ★★★★★

**THE BEST WAY TO UNDERSTAND ELECTRONICS**

ELECTRONICS CONCEPTS FULLY COVERED AND EXPLAINED WITH EASY, DEMONSTRATIVE AND OUTSTANDING EXERCISES AND EXAMPLES, THIS BOOK IS A 'MUST HAVE' FOR ANY STUDENT OR HOBBIST. IF YOU ARE A POOR SOUL LOOKING FOR ELECTRONICS TO BE EASY, YOU HAVE TO HAVE THIS BOOK

Noreen, Dom, April 19, 2000, ★★★★★

**Outstanding**

A very good book. Gives the user a sound understanding of AC/DC circuit principles.

Tim, slug for a major oil company, November 23, 1999, ★★★★★

**Great Book**

Excellent book. Used it for undergraduate course and found it very understandable giving the user a firm back ground in AC/DC circuit analysis.

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**Fundamentals of Electric Circuits**

[Charles K. Alexander](#), [Matthew Sadiku](#), [Matthew N.O. Sadiku](#)

**Barnes & Noble Sales Rank:** 73,819

Nick, I am a student at a university, November 20, 2003, ★

**Terrible**

I don't know how to explain how poorly written it is. This is the second time I've taken the class, and knowing the material does not make the textbook easier to understand at all. I learn the concepts from the teacher, and I use the book to get the examples wrong, since their answers in the back are often incorrect. There are much better textbooks out there to use, because if this is the best that you can get for circuit modeling, then the next few years of college students and high school students alike will be getting much worse grades and less understanding of the material than teaching a class without a book.

A reviewer, an undergraduate student, November 11, 2002, ★

**Dreadful**

The explanations are clear only if you already know the concepts being explained; if you're learning them for the first time (like me), the book makes an okay paperweight. Explanations of concepts are inadequate and poorly done, especially considering the inordinate amount of time spent explaining (and marketing) PSpice for Windows and IEEE. The answers to practice problems in the back of the book are often wrong. The "step-by-step" analysis of example problems is dreadful, leaving major steps and subtleties not explained in the text up to the reader to blindly stab at. There is nothing "lucid" about this book.

A reviewer, A reviewer, September 11, 2002, ★

**Do Not Waste Money**

This book is completely useless! It is very straight forward like you already know something about circuits, and it doesn't give you time to understand one concept before it jumps right into another one. If taking circuits for the first time this is very confusing. I do not recommend this book!

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**Essentials of Electronic Testing for Digital, Memory and Mixed-Signal VLSI Circuits**

[Michael J. Bushnell](#), [Vishwani D. Agrawal](#)

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**Analysis and Application of Analog Electronic Circuits to Biomedical Instrumentation**

[Robert B. Northrop](#)

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**Electronics Fundamentals: Circuits, Devices, and Applications**

[Thomas L. Floyd](#)

**Barnes & Noble Sales Rank:** 122,995

New edition of a text that provides coverage of basic electrical and electronic concepts, practical applications, and troubleshooting of AC and DC circuits and devices. Each of the 21 chapters includes an introduction, key terms, assignments, and reviews. Margin icons indicate text circuits rendered in Electronics Workbench and CircuitMaker, which are included on the CD-ROM.

Annotation c. Book News, Inc., Portland, OR (booknews.com)

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**Electronics Technology Fundamentals**

[Robert T. Paynter](#), [Toby Boydell](#), [B.J. Toby Boydell](#)

**Barnes & Noble Sales Rank:** 284,228

## Mixed Signal Textbooks

**Analog Behavioral Modeling with the VERILOG-a Language**

[Dan FitzPatrick](#), [Ira Miller](#)



**Barnes & Noble Sales Rank:** 86,363

Analog Behavioral Modeling with the Verilog-A Language provides the IC designer with a comprehensive introduction to the methodologies and uses of analog behavioral modeling using the Verilog-A language. An overview of Verilog-A language constructs as well as applications using the language are presented. Analog Behavior Modeling with the Verilog-A Language is accompanied by the Verilog-A Explorer IDE (Integrated Development Environment), a limited capability Verilog-A enhanced spice simulator.

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**Essentials of Electronic Testing for Digital, Memory and Mixed-Signal VLSI Circuits**

[Michael J. Bushnell](#), [Vishwani D. Agrawal](#)

**Barnes & Noble Sales Rank:** 111,966

Today's electronic design and test engineers deal with several types of subsystems, namely, digital, memory, and mixed-signal, each requiring different test and design for testability methods. This book provides a careful selection of essential topics on all three types of circuits. The outcome of testing is product quality, which means "meeting the user's needs at a minimum cost". The book includes test economics and techniques for determining the defect level of VLSI chips. Besides being a textbook for a course on testing, it is a complete testability guide for an engineer working on any kind of electronic device or system or a system-on-a-chip.

The book consists of:

- Part I: Introduction, Test Process and ATE, Test Economics and Product Quality, Fault Modeling
- Part II: Logic and Fault Simulation, Testability Measures, Combinatorial ATPG, Sequential ATPG, Memory Test, DSP-Based Analog Test, Model-Based Analog Test, Delay Test, IDDQ Test
- Part III: DFT and Scan Design, BIST, Boundary Scan, Analog Test Bus, System Test and Core-Based Design, Future Testing
- Appendices: Cyclic Redundancy Code Theory, Primitive Polynomials, Books on Testing
- Bibliography: over 700 entries

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## Phase Locked Loops

[Roland E. Best](#)



**Barnes & Noble Sales Rank:** 119,655

Roland E. Best's *Phase-Locked Loops* is an outstanding reference on phase-locked loop design. It is an excellent handbook for anyone interested in electronic circuitry, from the student reading it for the first time to the seasoned professional who will want it close by for a quick refresher on a specific aspect of circuit design. In this fifth edition, the author synthesizes his own experience with extensive knowledge to produce this comprehensive work on phase-locked loops (PLL) systems, from theory to application, and more.

This book is organized into 11 chapters that cover the subject exhaustively. For example, Chapter 1 is a short introduction to the PLL domain, and Chapter 2 deals with the theory, design, and applications of mixed-signal PLLs. Next, Chapter 3 is devoted to digital PLL frequency synthesizers. Chapter 4 deals with the design of higher-order systems (filters), while Chapter 5 discusses the automatic designs and analysis of PLLs as well as many other design examples. Chapter 6 treats the theory, design, and applications of the all-digital PLL (ADPLL), a PLL category introduced at a later point in the book than the preceding ones. Next, Chapter 7 describes computer-aided design and simulation of ADPLLs. Chapter 8 discusses the hardware/software trade-off in the domain of the PLL and describes a number of software algorithms that can be used to implement software PLLs (SPLLs). In Chapter 9, a review of PLL applications in the field of communications is given. Chapter 10 contains a list of PLL integrated circuits (ICs) currently available from American, European, and Japanese manufacturers, including short descriptions of the circuits. Next, Chapter 11 demonstrates how parameters of PLLs can be measured with conventional lab instruments such as oscilloscopes and signal generators. Best then throws in three appendices, to be sure nothing is overlooked.

Roland E. Best has provided a definitive work on phase-locked loops, and circuit designers, technicians, and students will want it handy to answer virtually any PLL question. *John R. Vacca*

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## **Closing the Gap Between ASIC and Custom Tools and Techniques for High-Performance ASIC Design**

[David Chinnery](#), [Kurt William Keutzer](#)



**Barnes & Noble Sales Rank:** 133,572

This book carefully details design tools and techniques for high-performance ASIC design. Using these techniques, the performance of ASIC designs can be improved by two to three times. Important topics include:

- Improving performance through microarchitecture;
- Timing-driven floorplanning;
- Controlling and exploiting clock skew;
- High performance latch-based design in an ASIC methodology;
- Automatically identifying and synthesizing complex logic gates;
- automated cell sizing to increase performance and reduce power;
- Controlling process variation.

These techniques are illustrated by designs running two to three times the speed of typical ASICs in the same process generation.

### **William J. Dally**

This book unveils the mystery behind the performance gap between ASIC and Custom design and shows how to close the gap with minimal design effort. A must read for every ASIC or ASSP designer.

— *Professor, Stanford University*

**C. A. Vissers**

Most IP core providers must provide high-performance designs within the constraints of an ASIC methodology. I'm optimistic that careful application of the techniques in this book will enable me to design embedded processors that do indeed close 'the Gap Between ASIC and Custom'.

— *Director of Architecture, Trimedia Technologies Inc.*

**Gary Smith**

I've heard there is a price on the authors' heads. Power Users don't like people who give away their secrets.

— *Chief Analyst, Dataquest*

**Richard Goering**

This book provides a comprehensive explanation of why ASICs fall so far behind custom ICs in performance, and then shows how better tools, libraries and methodologies can narrow the gap. It's a must read for ASIC designers who want to boost performance - or custom designers who want to speed time to market with ASIC-like design methodologies.

— *EDA Editorial Director, EE Times*

**Weste**

Solves one of life's little mysteries... It looks like it should become required reading for the IC innovators of this millennium.'

— *author of Principles of CMOS VLSI Design, Cisco Systems, Inc.*

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**Introduction to Mixed-Signal IC Test and Measurement**

[Mark Burns](#), [Gordon W. Roberts](#)



**Barnes & Noble Sales Rank:** 138,207

Integrated circuits incorporating both digital and analog functions have become increasingly prevalent in the semiconductor industry. Mixed-signal IC test and measurement has grown into a highly specialized field of electrical engineering. It has become harder to hire and train new engineers to become skilled mixed-signal test engineers. The slow learning curve for mixed-signal test engineers is largely due to the shortage of written materials and university-level courses on the subject of mixed-signal testing. While many books have been devoted to the subject of digital test and testability, the same cannot be said for analog and mixed-signal automated test and measurement.

This book was written in response to the shortage of basic course material for mixed-signal test and measurement. The book assumes a solid background in analog and digital circuits as well as a working knowledge of computers and computer programming. A background in digital signal processing and statistical analysis is also helpful, although not absolutely necessary. This material is designed to be useful as both a university textbook and as a reference manual for the beginning professional test engineer. The prerequisite for this book is a junior level course in

linear continuous-time and discrete-time systems, as well as exposure to elementary probability and statistical concepts.

Chapter 1 presents an introduction to the context in which mixed-signal testing is performed and why it is necessary. Chapter 2 examines the process by which test programs are generated, from device data sheet to test plan to test code. Test program structure and functionality are also discussed in Chapter 2. Chapter 3 introduces basic DC measurement definitions, including continuity, leakage, offset, gain, DC power supply rejection ratio, and many other types of fundamental DC measurements. Chapter 4 covers the basics of absolute accuracy, resolution, software calibration, standards traceability, and measurement repeatability. In addition, basic data analysis is presented in Chapter 4. A more thorough treatment of data analysis and statistical analysis is delayed until Chapter 15. Chapter 5 takes a closer look at the architecture of a generic mixed-signal ATE tester. The generic tester includes instruments such as DC sources, meters, waveform digitizers, arbitrary waveform generators, and digital pattern generators with source and capture functionality. Chapter 6 presents an introduction to both ADC and DAC sampling theory. DAC sampling theory is applicable to both DAC circuits in the device under test and to the arbitrary waveform generators in a mixed-signal tester. ADC sampling theory is applicable to both ADC circuits in the device under test and to waveform digitizers in a mixed-signal tester. Coherent multi-tone sample sets are also introduced as an introduction to DSP based testing. Chapter 7 further develops sampling theory concepts and DSP-based testing methodologies,

which are at the core of many mixed-signal test and measurement techniques. FFT fundamentals, windowing, frequency domain filtering, and other DSP-based testing fundamentals are covered in Chapter 6 and 7. Chapter 8 shows how basic AC channel tests can be performed economically using DSP-based testing. This chapter covers only non-sampled channels, consisting of combinations of op-amps, analog filters, PGAs and other continuous-time circuits. Chapter 9 explores many of these same tests as they are applied to sampled channels, which include DACs, ADCs, sample and hold (S/H) amplifiers, etc. Chapter 10 explains how the basic accuracy of ATE test equipment can be extended using specialized software routines. This subject is not necessarily taught in formal ATE tester classes, yet it is critical in the accurate measurement of many DUT performance parameters. Testing of DACs is covered in Chapter 11. Several kinds of DACs are studied, including traditional binary-weighted, resistive ladder, pulse with modulation (PWM), and sigma delta architectures. Traditional measurements like INL, DNL and absolute error are discussed. Chapter 12 builds upon the concepts in Chapter 11 to show how ADCs are commonly tested. Again, several different kinds of ADC's are studied, including binary-weighted, dual-slope, flash, semi-flash, and sigma-delta architectures. The weaknesses of each design are explained, as well as the common methodologies used to probe their weaknesses. Chapter 13 explores the gray art of mixed-signal DIB design. Topics of interest include component selection, power and ground layout, crosstalk, shielding, transmission lines, and tester loading. Chapter 13 also illustrates several common DIB circuits and their use in mixed-signal testing. Chapter 14 gives a brief introduction to some of the techniques for analog and mixed-signal design for test. There are fewer structured approaches for mixed-signal DfT than for purely digital DfT. The more common ad-hoc methods are explained, as well as some of the industry standards such as IEEE Std. 1149.1 and 1149.4. A brief review of statistical analysis and Gaussian distributions is presented in Chapter 15. This chapter also shows how measurement results can be analyzed and viewed using a variety of software tools and display formats. Datalogs, shmoo plots, and histograms are discussed. Also, statistical process control (SPC) is explained, including a discussion of process control metrics such as Cp and Cpk. Chapter 16 examines the economics of production testing. The economics of testing are affected by many factors such as equipment purchase price, test floor overhead costs, test time, dual-head testing, multi-site testing, and time to market. A test engineer's debugging skills heavily impacts time to market. Chapter 16 examines the test debugging process to attempt to set down some general guidelines for debugging mixed-signal test programs. Finally, emerging trends that affect test economics and test development time are presented in Chapter 16. Some or all these trends will shape the future course of mixed-signal test and measurement.

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## Demystifying Mixed Signal Test Methods

[Mark Baker](#)



**Barnes & Noble Sales Rank:** 138,494

- \*Takes a less theoretical, less mathematical, and more applications-oriented approach
- \*Emphasizes commonly used devices and systems that engineers encounter in their daily tasks
- \*Aims to develop an intuitive understanding of mixed signal testing

Mark Baker provides a “crash course” in the fundamental theory, concepts, and terminology of mixed signal devices and systems and the techniques used to test them. Mixed signal devices/systems include analog to digital and digital to analog converters, digital signal processing, phase-locked loops (PLLs), compact disc (CD) and digital video disc (DVD) players and recorders—in short, almost any system or device that processes real-world analog data in digital form uses mixed signals technology and will require engineers to have an understanding of the techniques described in this book.

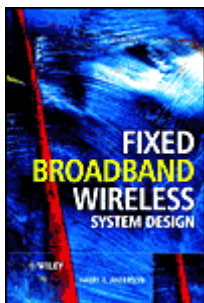
Mixed Signal Test Methods Demystified is a less theoretical, less mathematical, and more applications-oriented approach than other books available on the topic. In effect, this book will give readers a “just in time” understanding of the essentials of mixed signal testing techniques. Emphasis will be on commonly used devices and systems (such as PLLs and DSP) that engineers encounter in their daily tasks. Sampling theory is covered in detail, as this is the foundation for understanding all mixed signal testing technique, and readers will have a strong intuitive grasp of this topic after finishing this book.

Baker aims to develop an intuitive understanding of mixed signal testing that minimizes the mathematics required and is germane to the sort of testing requirements found in typical engineering situations.

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## Fixed Broadband Wireless System Design

[Harry R. Anderson](#)



**Barnes & Noble Sales Rank:** 144,899

Fixed broadband networks can provide far higher data rates and capacity than the currently envisioned 3G and 4G mobile cellular systems. Achieving higher data rates is due to the unique technical properties of fixed systems, in particular, the use of high gain and adaptive antennas, wide frequency bands, dynamic data rate and channel resource allocation, and advanced multiple access techniques.

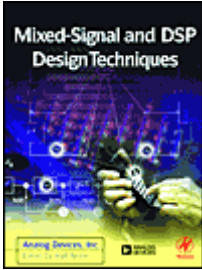
*Fixed Broadband Wireless System Design* is a comprehensive presentation of the engineering principles, advanced engineering techniques, and practical design methods for planning and deploying fixed wireless systems, including:

- Point-to-point LOS and NLOS network design
- Point-to-point microwave link design including active and passive repeaters
- Consecutive point and mesh network planning
- Advanced empirical and physical propagation modeling including ray-tracing
- Detailed microwave fading models for multipath and rain
- NLOS (indoor and outdoor) propagation and fading models
- Propagation environment models including terrain, morphology, buildings, and atmospheric effects
- Novel mixed application packet traffic modeling for dimensioning network capacity
- Narrow beam, wide beam, and adaptive (smart) antennas
- MIMO systems and space-time coding
- Channel planning including fixed and dynamic channel assignment and dynamic packet assignment
- IEEE 802.11b and 802.11a (WLAN) system design
- Free space optic (FSO) link design

At present, there are no titles available that provide such a concise presentation of the wide variety of systems, frequency bands, multiple access techniques, and other factors that distinguish fixed wireless systems from mobile wireless systems. *Fixed Broadband Wireless System Design* is essential reading for design, system and RF engineers involved in the design and deployment of fixed broadband wireless systems, fixed wireless equipment vendors, and academics and postgraduate students in the field.

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**Mixed-signal and DSP Design Techniques Analog Devices, Inc.**  
[Walt Kester](#) (Editor)



**Barnes & Noble Sales Rank:** 185,497

The reader is provided with information on how to choose between the techniques and how to design a system that takes advantage of the best features of each of them. Imminently practical in approach, the book covers sampled data systems, choosing A-to-D and D-to-A converters for DSP applications, fast Fourier transforms, digital filters, selecting DSP hardware, interfacing to DSP chips, and hardware design techniques. It contains a number of application designs with thorough explanations. Heavily illustrated, the book contains all the design reference information that engineers need when developing mixed and digital signal processing systems.

- Brought to you from the experts at Analog Devices, Inc.
- A must for any electrical, electronics or mechanical engineer's reference shelf
- Design-oriented, practical volume

Mixed-signal processing implies the use of both analog and digital in the same system; this is a specialized type of signal processing that requires a high level of experience and training. Knowledge of digital signal processing (DSP) techniques is now becoming a requirement of almost every engineer. Analog Devices' Mixed-signal and DSP Design Techniques focuses primarily on signal processing hardware how it works, how to interface to it, and how to design it and debug it.

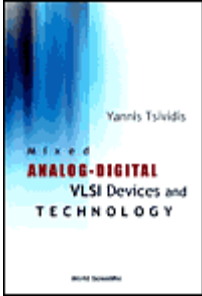
This is the first volume in a new Newnes professional/reference series in partnership with Analog Devices. Analog Devices Inc. (ADI) is an S&P 500 company with annual revenues over \$2 billion, headquartered in Norwood, MA, and are the acknowledged world authorities on data conversion and signal processing. Many of the world's foremost experts on analog, digital, and mixed signal processing are employed by Analog Devices, and they have contributed to this volume.

The reader is provided with information on how to choose between the techniques and how to design a system that takes advantage of the best features of each of them. Imminently practical in approach, the book covers sampled data systems, choosing A-to-D and D-to-A converters for DSP applications, fast Fourier transforms, digital filters, selecting DSP hardware, interfacing to DSP chips, and hardware design techniques. It contains a number of application designs with thorough explanations. Heavily illustrated, the book contains all the design reference information that engineers need when developing mixed and digital signal processing systems.

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**Mixed Analog-Digital VLSI Devices and Technology**

[Yannis Tsiividis](#)



**Barnes & Noble Sales Rank:** 240,095

Improve your circuit-design potential with this expert guide to the devices and technology used in mixed analog-digital VLSI chips for such high-volume applications as hard-disk drives, wireless telephones, and consumer electronics. The book provides you with a critical understanding of device models, fabrication technology, and layout as they apply to mixed analog-digital circuits.

You will learn about the many device-modeling requirements for analog work, as well as the pitfalls in models used today for computer simulators such as Spice. Also included is information on fabrication technologies developed specifically for mixed-signal VLSI chips, plus guidance on the layout of mixed analog-digital chips for a high degree of analog-device matching and minimum digital-to-analog interference.

This reference book features an intuitive introduction to MOSFET operation that will enable you to view with insight any MOSFET model - besides thorough discussions on valuable large-signal and small-signal models.

Filled with practical information, this first-of-its-kind book will help you grasp the nuances of mixed-signal VLSI-device models and layout that are crucial to the design of high-performance chips.

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**Analog Circuit Design: Structured Mixed-Mode Design, Multi-Bit SIGMA-Delta**  
[Michiel Steyaert](#), [van Roermund Arthur H. M.](#), [Johan H. Huijsing](#)

**Barnes & Noble Sales Rank:**

Contains the contributions of 18 workshop tutorials addressing new design ideas of analog circuit design. The first section on structured mixed-mode design includes coverage of structured oscillator design, structured LNA design, high-level simulation and modeling tools for mixed-signal front-ends of wireless systems; and structured analog layout design. Multi-bit sigma delta converters, covers circuit design aspects of multi-bit delta-sigma converters, and correction-free multi-bit sigma-delta modulators for ADLS are addressed in the second part. The third, focusing on short range RF circuits, covers RF circuits in DECT and Bluetooth, wireless LANs, and low power RF receiver for wireless hearing aids. Annotation (c)2003 Book News, Inc., Portland, OR

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**DSP-Based Testing of Analog and Mixed-Signal Circuits**  
[Matthew Mahoney](#)



Answers the commonly asked questions about how digital signal processing-based machines work and what role DSP plays in the process. It shows you how DSP performs in real-test situations and uses mathematical concepts rather than derivations. The text addresses difficult test problems and their solutions resulting from the union of automatic test equipment (ATE) and DSP. The author establishes a philosophy of DSP-based testing describing how to think, how to approach a problem, how to create a solution, and how to determine if it really works properly.

## Biomedical Instrumentation

**Medical Instrumentation: Application and Design**

[John G. Webster](#) (Editor), [John W. Clark](#), [Michael R. Neuman](#), [Walter H. Olson](#), [Robert A. Peura](#)



**Barnes & Noble Sales Rank:** 57,325

This well-established text describes the principles, applications and design of the medical instrumentation most commonly used in hospitals. Because equipment changes with time, the authors stress fundamental principles of operation and general types of equipment. They avoid detailed descriptions and photographs of specific models. Design principles are emphasized so that a scientist with only some background in electronics can gain enough information to design instruments that may not be commercially available. Since biomedical engineering is an interdisciplinary field, the authors have provided varied healthcare industry applications for each type of instrument.

New edition of a text which describes the principles, applications, and design of the medical instruments most commonly used in hospitals. Stresses fundamental principles of operation and general types of equipment rather than detailed descriptions of specific models. Fourteen chapters discuss basic concepts, sensors and principles, amplifiers and signal processing, biopotential electrodes and amplifiers, blood pressure and sound, measurement of flow and volume of blood and of the respiratory system, chemical biosensors, laboratory instrumentation and imaging systems, therapeutic and prosthetic devices, and electrical safety. Annotation c. by Book News, Inc., Portland, Or.

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**Sensors and Signal Conditioning, Vol. 1**

[Ramon Pallas-Areny](#), [John G. Webster](#)



**Barnes & Noble Sales Rank:** 131,218

Praise for the First Edition . . .

"A unique piece of work, a book for electronics engineering, in general, but well suited and excellently applicable also to biomedical engineering . . . I recommend it with no reservation, congratulating the authors for the job performed." -IEEE Engineering in Medicine & Biology

"Describes a broad range of sensors in practical use and some circuit designs; copious information about electronic components is supplied, a matter of great value to electronic engineers. A large number of applications are supplied for each type of sensor described . . . This volume is of considerable importance."-Robotica

In this new edition of their successful book, renowned authorities Ramon Pallas-Areny and John Webster bring you up to speed on the latest advances in sensor technology, addressing both the explosive growth in the use of microsensors and improvements made in classical macrosensors. They continue to offer the only combined treatment for both sensors and the signal-conditioning circuits associated with them, following the discussion of a given sensor and its applications with signal-conditioning methods for this type of sensor. New and expanded coverage includes:

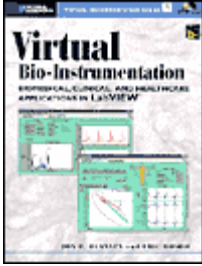
- \* New sections on sensor materials and microsensor technology
- \* Basic measurement methods and primary sensors for common physical quantities
- \* A wide range of new sensors, from magnetoresistive sensors and SQUIDs to biosensors
- \* The widely used velocity sensors, fiber-optic sensors, and chemical sensors
- \* Variable CMOS oscillators and other digital and intelligent sensors
- \* 68 worked-out examples and 103 end-of-chapter problems with annotated solutions

Describes the principle of operation of most common sensors, their advantages and disadvantages, and analyzes their electronic signal conditioning circuits. Covers a broad range of sensors and gives actual specifications for several commercial models. Annotation c. Book News, Inc., Portland, OR (booknews.com)

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**Virtual Bio-Instrumentation : Biomedical, Clinical, and Healthcare Applications in LabVIEW**

[Jon B. B. Olansen](#), [Eric Rosow](#)



**Barnes & Noble Sales Rank:** 288,253

Bringing the power of virtual instrumentation to the biomedical community.

- Applications across diverse medical specialties
- Detailed design guides for LabVIEW and BioBench applications
- Hands-on problem-solving throughout the book
- Laboratory, clinical, and healthcare applications
- CD contains numerous VI's with source code, plus several demos

Virtual instrumentation allows medical researchers and practitioners to combine the traditional diagnostic tools with advanced technologies such as databases, Active X, and the Internet. In both laboratory and clinical environments, users can interact with a wealth of disparate systems, facilitating better, faster, and more informed decision making. *Virtual Bio-Instrumentation: Biomedical, Clinical, and Healthcare Applications in LabVIEW* is the first book of its kind to apply VI technology to the biomedical field.

- Hands-on problems throughout the book demonstrate immediate practical uses
- Examples cover a variety of medical specialties
- Detailed design instructions give the inside view of LabVIEW and BioBench applications

Both students and practicing professionals will appreciate the practical applications offered for modeling fundamental physiology, advanced systems analysis, medical device development and testing, and even hospital management and clinical engineering scenarios.

### **About the CD-ROM:**

The CD-ROM contains numerous virtual instruments along with source code to illustrate concepts and serve as building blocks for users' own projects. Demonstration copies of LabVIEW, BioBench, and other applications allow users to build their own VI's, but also view some relevant tools already available in the biomedical market.

The power of virtual instrumentation allows medical researchers and practitioners to model diverse scenarios and interact with a variety of existing systems to enhance decision-making in this crucial arena. *Virtual Bio-Instrumentation: Biomedical, Clinical, and Healthcare Applications in LabVIEW* provides detailed designs for VI's in numerous medical specialties, with examples, source code, and software trials included on CD-ROM.

**Jon B. Olansen** began his career as a NASA flight controller, supporting 32 Space Shuttle missions. He obtained his Ph.D. as a National Instruments Fellow at Rice University, where he specialized in biomedical experimentation in electrophysiology and cardiovascular hemodynamics. He has since returned to NASA, representing the Astronaut Office

in the design, development, and operation of human life sciences experiments destined for the International Space Station.

**Eric Rosow** has over 16 years of experience in biomedical engineering and life science applications of virtual instrumentation. He is Director of Biomedical Engineering at Hartford Hospital, where he introduced virtual instrumentation into the hospital environment. He is also a co-founder of Premise Development Corporation, a software company for the biomedical and healthcare industries, and has co-developed numerous virtual instrument solutions for leading healthcare institutions throughout the world.

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### **MEMS and Microsystems: Design and Manufacture**

[Tai-Ran Hsu](#)



**Barnes & Noble Sales Rank: 355,313**

Microsystems and MEMS technology represents one of the biggest breakthroughs in the area of mechanical and electronic technology to occur in recent years. This is the technology of extremely small and powerful devices — and systems built around such devices — which have mechanical and electrical components. MEMS technology is beginning to explode, with major application areas being telecommunications, biomedical technology, manufacturing and robotic systems, transportation and aerospace. Academics are desperate for texts to familiarize future engineers with this broad-ranging technology.

Hsu's MEMS & MICROSYSTEMS text provides an engineering design approach to MEMS and microsystems, appropriate for professionals and senior level students. This design approach is conveyed through good examples, cases, and applied problems. The book is appropriate for Mechanical and Aerospace engineers, since it carefully explains the electrical/electronic aspects of the subject. Electrical Engineering students will be provided strong coverage of the mechanical side of MEMS, something they may not receive from other courses in their curriculum.

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### **Sensors, Transducers and LabVIEW: An Application Approach To Virtual Instrumentation**

[Barry E. E. Paton](#), [Bernard M. Goodwin](#) (Editor)



**Barnes & Noble Sales Rank:** 379,241

Sensors, Transducers and LabVIEW teaches LabVIEW virtual instrumentation the best way possible: hands-on. You'll encounter a world of fascinating, practical interfacing challenges from physics, chemistry, mathematics, engineering the biomedical sciences and beyond. Through these applications, you'll discover the LabVIEW environment, programming structures, constants, variables, controls, indicators, arrays, pseudo-random numbers and other key elements of LabVIEW programming. LabVIEW expert Barry E. Paton covers all this and more.

Offers instructions to LabVIEW virtual instrumentation using practical interfacing problems from physics, chemistry, mathematics, engineering, the biomedical sciences, and other fields. The included CD-ROM contains LabVIEW 5.0 Evaluation Edition; 10 MB of programming examples; exercises, sensor simulations, course development templates; and video clips of experiments. Annotation c. by Book News, Inc., Portland, Or.

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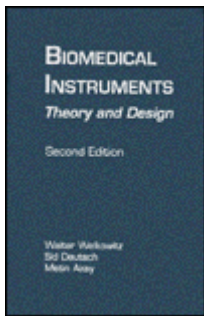
**Analysis and Application of Analog Electronic Circuits to Biomedical Instrumentation**  
[Robert B. Northrop](#)



**Barnes & Noble Sales Rank:** 505,263

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**Biomedical Instruments**  
[Sid Deutsch](#), [Walter Welkowitz](#), [Metin Akay](#) (Editor)



**Barnes & Noble Sales Rank:** 536,359

This sourcebook offers all the information you need to understand and design biomedical instruments. Biomedical Instruments contains extensive analysis of signal processing electronic design for medical instruments, in-depth descriptions of design methods for medical transducers, and an introduction to medical imaging and tomographic algorithms. Transducers covered include variable R, L, and C, piezoelectric, electrodynamic and magnetostrictive, force balance, and fiber optic. Operational amplifiers, analog filters, biotelemetry, discriminators, phase-locked loops, and

microprocessors are covered in a comprehensive section on circuitry. Exercises and problems accompany each chapter of the text.

This is the first paragraph of the preface...either the paragraph above, or this paragraph can be used for the blurb\_

From the Preface:

The book aims at (a) presenting a physical explanation for the behavior of various transducer, (b) developing the mathematical theory applicable to these transducers, and (c) discussing the practical design of biomedical instruments. Our hope is that the book will serve as a text for biomedical engineering students who will be engaged in the design of instruments, as a reference book for medical instrument designers, and as a source of ideas for the large numbers of biomedical research workers who, at one time or another, must build a gadget to implement their research. Numerous examples of medical instrument design are presented in order to clarify the mathematical analyses.

#### Key Features

- \* Brings the volume up-to-date with new material on microprocessor applications, fiber optic instruments, and modern imaging systems
- \* Explains behavior of transducers
- \* Develops mathematical theory for transducers
- \* Discusses the design of biomedical instruments
- \* Serves as a text for biomedical engineers or a reference for medical instrument designers
- \* Provides suitable homework problems at the end of each chapter

A textbook for a one-year senior or first-year graduate course for biomedical engineering students. Presents a physical explanation for the behavior of various transducers and develops the applicable mathematical theory for them, and discusses practical aspects of instrument design. The first edition was published in 1976. Annotation c. Book News, Inc., Portland, OR (booknews.com)

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### **LabVIEW for Automotive, Telecommunications, Semiconductor, Biomedical and Other Applications**

[Hall T. Martin](#), [Meg L. Martin](#)



**Barnes & Noble Sales Rank:** 672,766

- The complete LabVIEW solutions reference for every leading vertical market!
- Dozens of practical, detailed LabVIEW applications from the world's leading implementers!
- Broad coverage! Telecom, automotive, semiconductor, biomedical, and general test/measurement
- Start-to-finish explanations: approach, implementation, and results.

## National Instruments Virtual Instrumentation Series

Many test and measurement books focus on theory: this one focuses totally on applications. You'll find dozens of the best real-world LabVIEW applications in leading test and measurement markets, with detailed explanations of design, implementation, and results. Every application offers a unique, detailed solution to a common test/measurement challenge, with diagrams, expert advice, and hands-on problem-solving techniques from experienced LabVIEW users.

The applications encompass virtually all key markets for test and measurement, including telecom, semiconductor, automotive, biomedical, and more:

- **Automotive:** Inverter durability testing, machine vision, exhaust simulations, and in-vehicle data acquisition
- **Biomedical:** Cardiovascular analysis, PC-based vision systems, and patient monitoring
- **Semiconductor:** Modeling of quantum atomic state transitions, electron beam physical vapor deposition, X-ray photolithography, and data acquisition
- **Telecommunications:** Antenna measurement, protocol analysis, remote fiber optics diagnostics, real-time algorithm testing, and more
- **General test & measurement:** Micromachining, nuclear fusion, and advanced industrial and military research

Whatever your application, whatever your LabVIEW experience, here are the practical insights, techniques and code you need to build world-class virtual instrumentation systems of your own.

**Number of Reviews:** 1    **Average Rating:** ★★★★★

A reviewer, A reviewer, August 28, 2000, ★★★★★

### **Application focused book**

If you are interested in learning about the latest trends in the markets listed in the title of the book and how LabVIEW is used in those markets. The book shows how tools like LabVIEW can be used to create final solutions in these industries. It is useful for seeing what types of applications are possible for LabVIEW also. It does not have any actual code, but does have contact information if more information on a particular application is desired.

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### **Biomedical Transducers and Instruments**

[Tatsio Togowa](#), [Toshiyo Tamura](#), [P. Ake Oberg](#)



**Barnes & Noble Sales Rank:** 702,847

Biomedical transducers are essential instruments for acquiring many types of medical and biological data. From the underlying principles to practical applications, this new book provides an

easy- to-understand introduction to the various kinds of biomedical transducers. The first comprehensive treatment of this subject in 20 years, the book presents state-of-the-art information including: discussions of biomedical transducers for measurements of pressure, flow, motion, temperature, heat flow, evaporation, biopotential, biomagnetism, and chemical quantities.

Chapters are devoted to particular areas of instrumentation needs

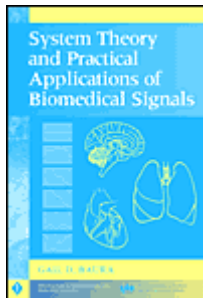
Provides an introduction to the various kinds of biomedical transducers, essential instruments for acquiring many types of medical and biological data. Covers the use of biomedical transducers for measurements of pressure, flow, motion, temperature, heat flow, evaporation, biopotential, biomagnetism, and chemical quantities. Includes a survey of fundamental knowledge of measurement using transducers; cardiovascular research and practice; orthopedic research and practice; general physiology and medicine; electrophysiology; and "in vivo" chemical measurement. Intended for undergraduate and postgraduate students of biomedical engineering, as well as biomedical scientists, clinical engineers, and industrialists involved in developing instruments. Annotation c. by Book News, Inc., Portland, Or.

Togawa, Tatsuo, PhD (Tokyo Medical and Dental Univ); Tamura, Toshiyo, PhD (Tokyo Medical and Dental Univ); Oberg, P. Ake, PhD (Linkoping Univ)

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### **System Theory and Practical Applications of Biomedical Signals**

Gail D. Baura



System theory is becoming increasingly important to medical applications. Yet, biomedical and digital signal processing researchers rarely have expertise in practical medical applications, and medical instrumentation designers usually are unfamiliar with system theory. System Theory and Practical Applications for Biomedical Signals bridges those gaps in a practical manner, showing how various aspects of system theory are put into practice by industry.

Written from the perspective of an industry insider who actually made useful products based on the theory, this pragmatic guide combines traditional DSP and compartmental modeling, as well as pairing in-depth discussions of practical medical instrumentation applications and system theory.

Biomedical and DSP academic researchers pursuing grants and industry funding will find its real-world approach extremely valuable. Its in-depth discussion of the theoretical issues will clarify for medical instrumentation managers how system theory can compensate for less-than-ideal sensors. With application MATLAB® exercises and suggestions for system theory course work included, the text also fills the need for detailed information for students or practicing engineers interested in instrument design.

A textbook for a system theory applications course within a graduate curriculum of biomedical engineering or bioengineering. The first in each pair of chapters explains a system theory

technology, and the second describes an industrial application of it. Annotation c. Book News, Inc., Portland, OR